The genus *Olivella* Swainson, 1831(Gastropoda: Olividae) in Argentine waters

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ABSTRACT

The genus *Olivella* is represented in Argentine waters by four species: *Olivella puelcha*, *O. tehuelcha*, *O. orejasmirandai*, and *O. santacruzence*. These species are redescribed, and type material, radulae, opercula, and penes are illustrated by SEM images. The geographic distribution of each species is provided based on field observations as well as on museum records. A synonymy for each species is presented.

Additional keywords: Argentina, Patagonia, Neogastropoda, *Olivina*

INTRODUCTION

The family Olividae is very well represented in the southwestern Atlantic. Rios (2009) recorded 35 species living in Brazilian waters. Among the genera belonging in this family, *Olivella* is probably the most specious, particularly in Brazil, where Rios (op. cit.) documented the occurrence of 20 species.

Among previous papers describing species of *Olivella* from southwestern Atlantic waters, those of Klappenbach (1962, 1964, 1986, 1991a, 1991b, 1991c) established the basics for the study of the taxonomy of this genus in Argentina, Uruguay, and Brazil. In addition to these papers, Castellanos and Fernández (1965) described the southernmost record for the genus: *Olivella santacruzence*, a species known only from dead shells.

Most of the early literature on South American *Olivella* described the shells and only rarely the radulae (which had never been illustrated through SEM), but not anatomical features such as penes. None of the papers published by those early authors reviewed the type material of the oldest species.

Recently, Absalão (2000) and Absalão and Pimenta (2003) started a series of new studies of the genus *Olivella* with emphasis on the Brazilian fauna. The present paper supplements these studies by including redescriptions, corroborating ranges, and including SEM illustrations of shells, radulae, penes and, when available, egg capsules for all known Argentine species.

MATERIALS AND METHODS

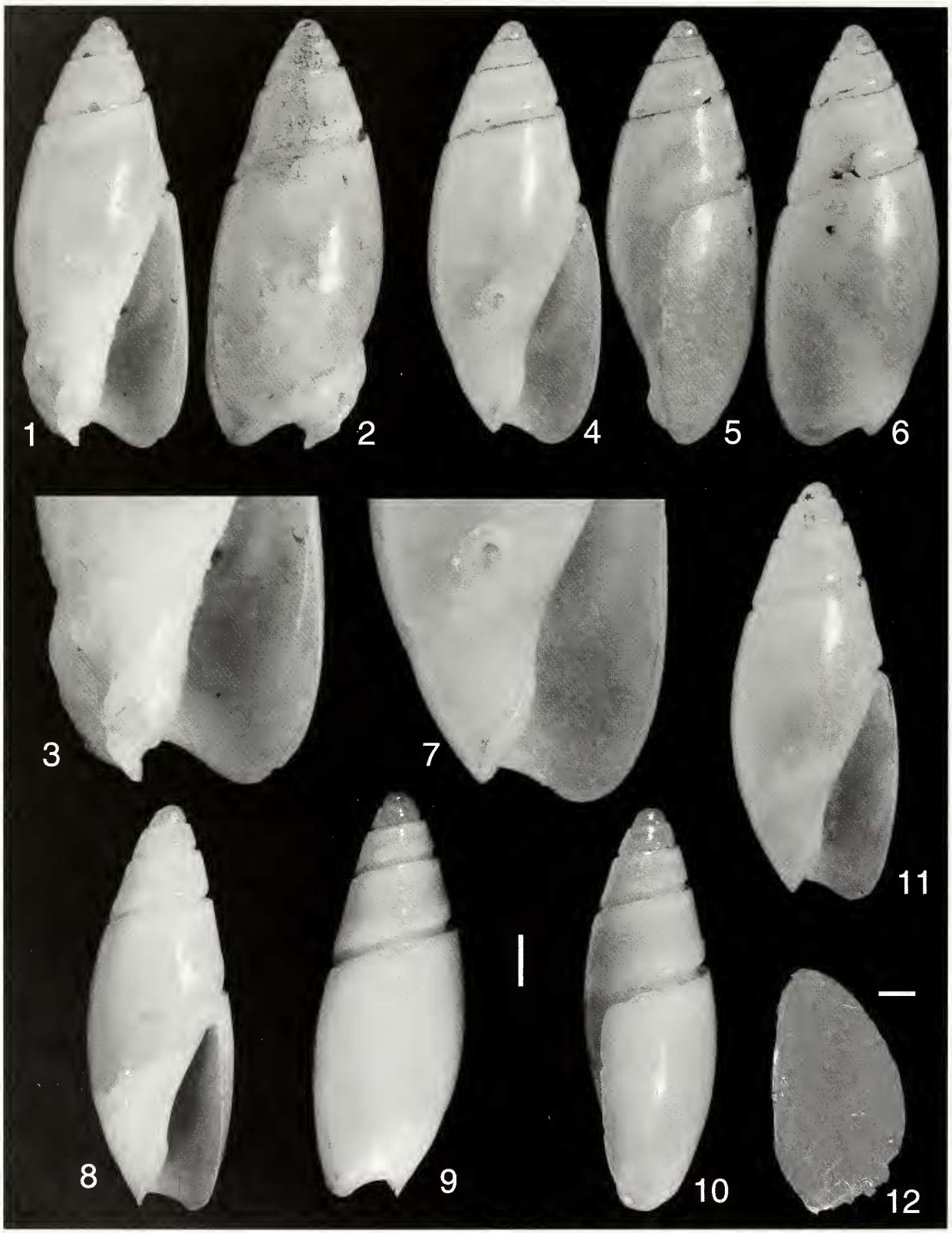
This study is based on material in the collections of the following institutions: Museo Argentino de Ciencias Naturales, Buenos Aires (MACN); Museo de La Plata (MLP) and Museo Nacional de Historia Natural de Montevideo (MNHNM). Type material from the Natural History Museum (BMNH), London, and the Museu de Zoologia da Universidade de São Paulo (MZUSP), Brazil, was also studied.

Live specimens were collected on the sandy infralittoral zone of the following localities from Chubut province: Punta Villarino on the Golfo San José (42°24′ S, 64°15′ W) on December 2002, 2003, 2004, 2007, and March 2005, in about 1–3 m depth during low tide, Punta Pardelas (42°37′ S, 64°15′ W) and off Estancia El Pedral, Golfo Nuevo (42°56′ S, 64°25′ W). All localities are along the perimeter of the Valdés Peninsula, Chubut Province, Argentina. Some of the specimens were frozen to allow for observation of soft tissues in an expanded condition. Radulae were cleaned with Clorox [NaClO] and sonicated in an ultrasonic cleaner, mounted, coated with gold, and photographed using a Philips XL30 scanning electron microscope at MACN. All shells where photographed using a Nikon D100 camera and digitally processed with the appropriate software.

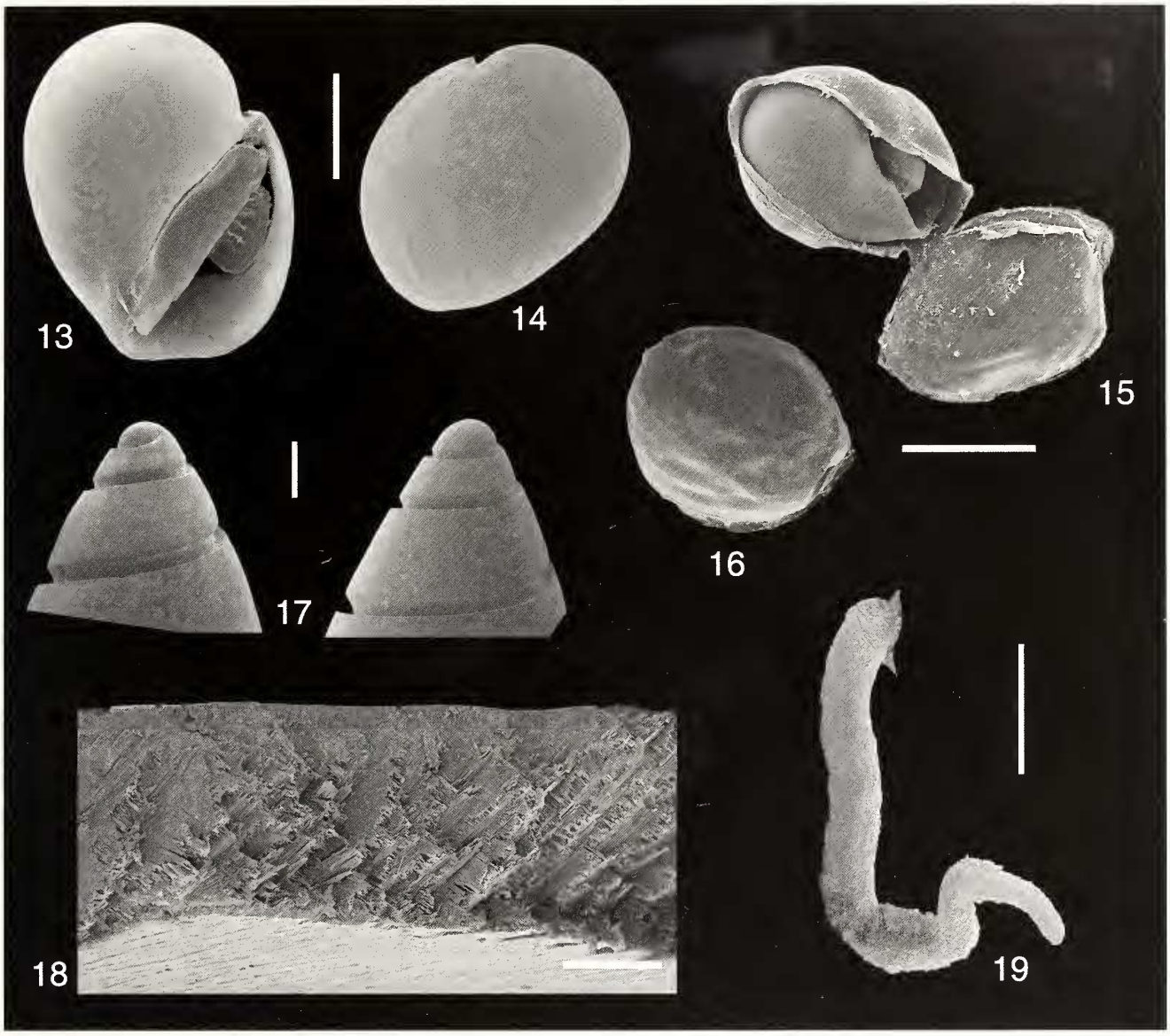
SYSTEMATICS

Class Gastropoda Cuvier, 1791
Subclass Orthogastropoda Ponder and Lindberg, 1995
Order Sorbeoconcha Ponder and Lindberg, 1995
Infraorder Neogastropoda Thiele, 1929
Family Olividae Latreille, 1825

Genus *Olivella* Swainson, 1831



Figures 1–12. *Olivella puelcha* (Duelos, 1835). **1–3.** Syntype of a female of *Olivina teluelchana* d'Orbigny, BMNH 1854.12.4.409, Bahía San Blas, Argentina. **4–7.** Syntype (male) of *Olivina teluelchana* d'Orbigny, BMNH 1854.12.4.409, Bahía San Blas, Argentina. **8–10.** MACN-In 16828-1, coast of Buenos Aires Province. **11.** Syntype (male) of *Olivina teluelchana* d'Orbigny, BMNH 1854.12.4.409. **12.** External view of the operculum. Scale bars: All shells = 1 mm; Figure 12 = 400 µm.



Figures 13–19. *Olivella puelcha* (Duclos, 1835). **13.** Apertural view of an embryonic shell. **14**. Adapertural view of another embryonic shell. **15**. Open egg capsule with an embryo inside. **16.** Closed egg capsule. **17**. Detail of the protoconch, scale bar = 500 µm. **18.** Shell ultrastructure, fracture surface commarginal. **19**. Penis, critical-point dried. Scale bars: Figures 15, 16 = 500 µm; 18 = 50 µm; 19 = 1000 µm.

Type Species: *Oliva dama* Mawe, 1828 by subsequent designation (Dall, 1909).

Olivella puelcha (Duclos, 1835)
(Figures 1–19, 39–41)

Oliva puelcha Duclos, 1835: pl. 4 bis, fig. 1–6, 20.
Oliva tehuelchana d'Orbigny, 1839: pl. 59, fig. 7–12; Marrat, 1871: 38, fig. 457.
Olivina tehuelchana d'Orbigny, 1840: 418.
Oliva tehuelcha Duclos in Chenu, 1844: 6; Chenu, 1845: pl. 5, fig. 1–6.
Olivaneillaria auricularia plata Ihering, 1908: 432.
Olivella tehuelchana (d'Orbigny, 1841).—Carcelles, 1944: 258; Castellanos and Fernández, 1965: 103, fig. 6–9; Castellanos, 1970: 122 pl. 10, fig. 5.
Olivella tehuelcha (Duclos, 1840).—Rios, 1985: 114. fig. 506; 1994: 144, fig. 630; 2009, fig. 687 (description is *O. puelcha*).
Olivella puelcha (Duclos, 1835).—Klappenbach, 1991b: 121.
Olivella plata Ihering, 1909 [sic].—Castellanos and Fernández, 1965: 101, fig. 4–5, 12, 13; Castellanos, 1970: 123; Rios, 1985: 113, fig. 504; 1994: 145, fig. 628; Borzone, 1995: 52, figs. 28, 29; Rios, 2009: 275.
Olivella plata (Ihering, 1908).—Pastorino, 1995: 10, Pl. 2, fig. 12; Pastorino, 2007: 1, Fig. 1, A–J.

Description: Shell of small size for genus, (to 11 mm), subquadrate, of 5 completely smooth, flat whorls. Protoconch of about 1.5–2 smooth whorls (Figure 17). Transition to teleoconch indistinct. Spire of medium size, suture channeled, narrowly open. Parietal callus smooth, broad, thick; Columella with one plait weakly divided in middle, becoming two plaits toward aperture. Fasciolar band moderately wide, posterior groove weak. Sexual dimorphism evident in shells of this species: Shells of females have wide vertical anterior groove, adjacent to parietal callus and columellar pillar structure. The groove curves adaxially at tip of also adaxially curved pillar, is absent in shells of males where parietal callus, apparently "fills in" groove described for female shells. Color always bright-white. Shell ultrastructure composed of thick outer layer of crossed-lamellar crystals and an extremely thin inner layer of apparently amorphous constitution. Radula rachiglossate, rachidian teeth wide, slightly concave, with convex, somewhat elliptical base. Cusp flat, rectangular, with rounded tips near center of tooth, becoming smaller, more broadly spaced, and sharper toward sides of tooth. Lateral teeth, flat, smooth, curved, blunted at ends, with thin, polygonal attachment area at base. Operculum semicircular, filling the whole aperture; nucleus subterminal, somewhat lateral. Growth lines, closely spaced over entire surface (Figure 12). Penis very long, thin, tapering, with curved tip at distal end (Figure 19). Egg capsules semicircular, each containing a single embryo (Figures 13–16).

Type Material: Thirteen syntypes of *Olivina tehuelchana* d'Orbigny, BMNH 1854.12.4.409, two females and 11 males. The type material of *Olivancillaria auricularia plata* Ihering was not localized, apparently it was never deposited.

Type Locality: "Côtes sablonneuses des îles de la baie San-Blas", sandy coasts of San Blas Bay Islands for *O. tehuelchana*; Punta Piedras, Buenos Aires Province, for *Olivella plata* Ihering.

Other Material Examined: MACN-In 30306, 37°28′ S, 56°20′ W; MACN-In 14348, 38°35′ S, 57°09′ W, in 102 m; MACN-In 16289, (all will hermit crabs), 38°52′ S, 56°20′ W in 90 m, Mar del Plata; MACN-In 16496-1; 16496, both from Punta Médanos; MACN-In 6619-42; 6619-41, Monte Hermoso, Buenos Aires province; MACN 16828-1, Buenos Aires province coast; MACN-In 30333, 16630, 30317, 30334, 20244, all from Bahía San Blas, Buenos Aires province; MACN-In 37603, Punta Villarino, Golfo San José, 42°24′ S, 64°15′ W, 1–3 m depth during low tide; MACN-In 37604, Punta Pardelas, 42°37′ S, 64°15′ W, Golfo Nuevo, Chubut, 6 m depth.

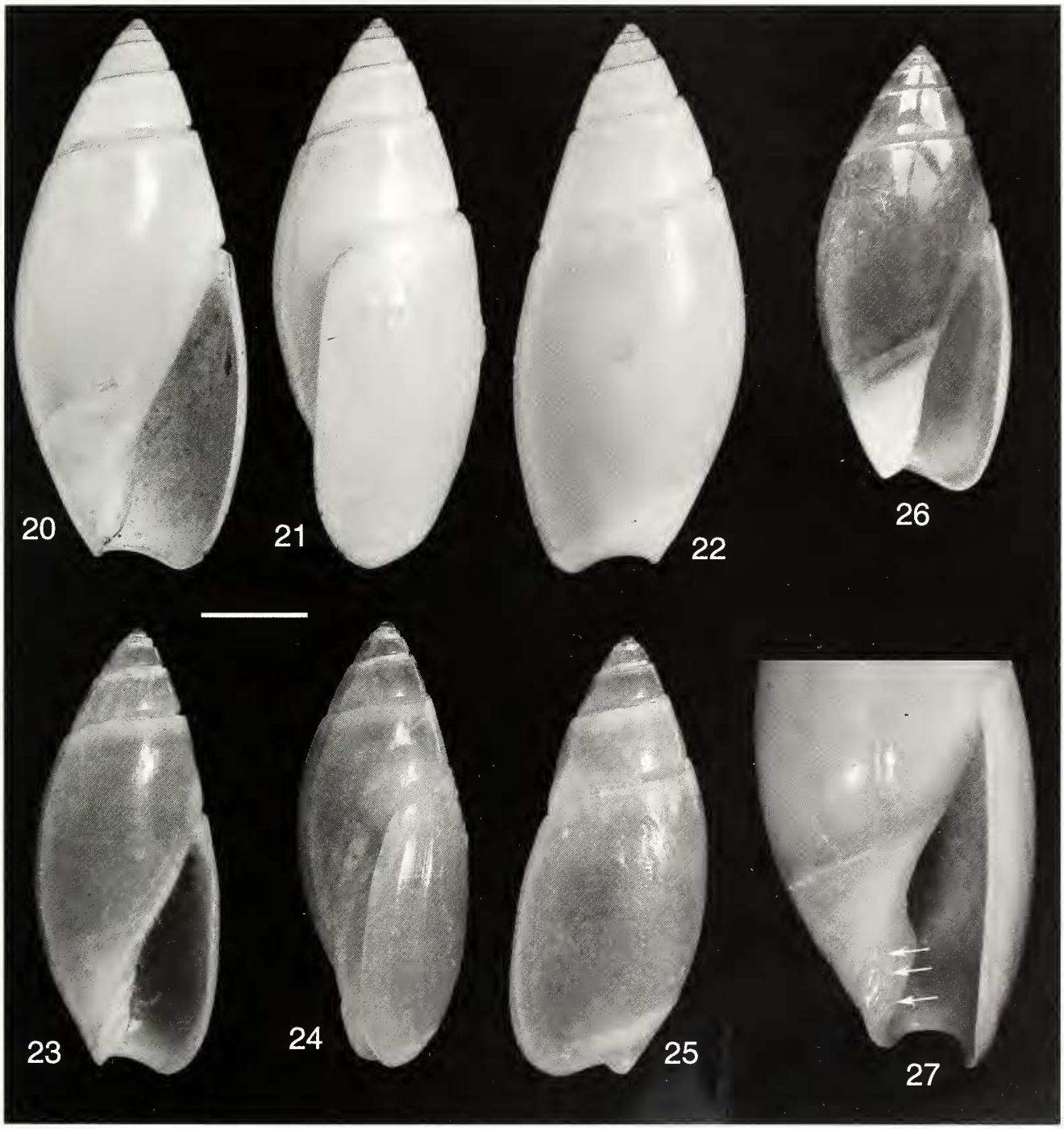
Geographic Distribution: Rio Grande do Sul, Brazil (Rios, 1994; 2009) to Puerto Pirámide, Golfo Nuevo, Chubut, Argentina.

Remarks: In a short note on the genus *Olivella*, Klappenbach (1991b) reviewed the taxonomic history of the two South Atlantic species of *Olivella* described by d'Orbigny. A number of factors led subsequent authors to confuse the true identity of these species and preventing correct placement of the material in the appropriate taxon. D'Orbigny collected his original material during his voyage to South America and, after returning to France, described them as *Oliva tehuelchana* and *Oliva puelchana*, publishing the plates in 1839 and the descriptions in 1840. However, before publication of either, he apparently sent his illustrations to Duclos. In 1835, Duclos published plates with illustrations of these two species in his monograph of the genus *Oliva*, apparently reproduced from the illustrations that d'Orbigny sent to him. Duclos changed the final part of the names ("*puelcha*" for "*puelchana*" and "*tchuelcha*" for "*tehuelchana*") and also transposed the names in the plates. In fact, as d'Orbigny stated in his publication several years later (1840: 418, footnote), both names are transposed in Duclos's monograph, so Duclos's *Oliva puelcha* and *O. tehuelcha* are d'Orbigny's *Olivina tehuelchana* and *O. puelchana*, respectively. As Duclos's monograph was published earlier, his names have priority over d'Orbigny's. Aguirre (1993: 30) was aware of Duclos' earlier names. However, she maintained d'Orbigny's names although she considered them synonyms [as *Olivella puelchana* (d'Orbigny, 1840)]. Unfortunately, she designated (Aguirre, 1993: 30, pl. I, fig. 5) the lectotype for *Olivina puelchana* d'Orbigny, 1840 [=*Olivella tehuelcha* Duclos], a specimen from lot BMNH 1854.12.4.409, which is actually one of the 13 syntypes of *Olivina tehuelchana* d'Orbigny, 1840 [= *O. puelcha* Duclos]. Therefore, such lectotype designation is invalid under the provisions of Article 74.2 of the International Code of Zoological Nomenclature (ICZN, 1999). Aguirre illustrated the specimen she selected as lectotype, which is clearly a male specimen of *O. puelcha* (Duclos).

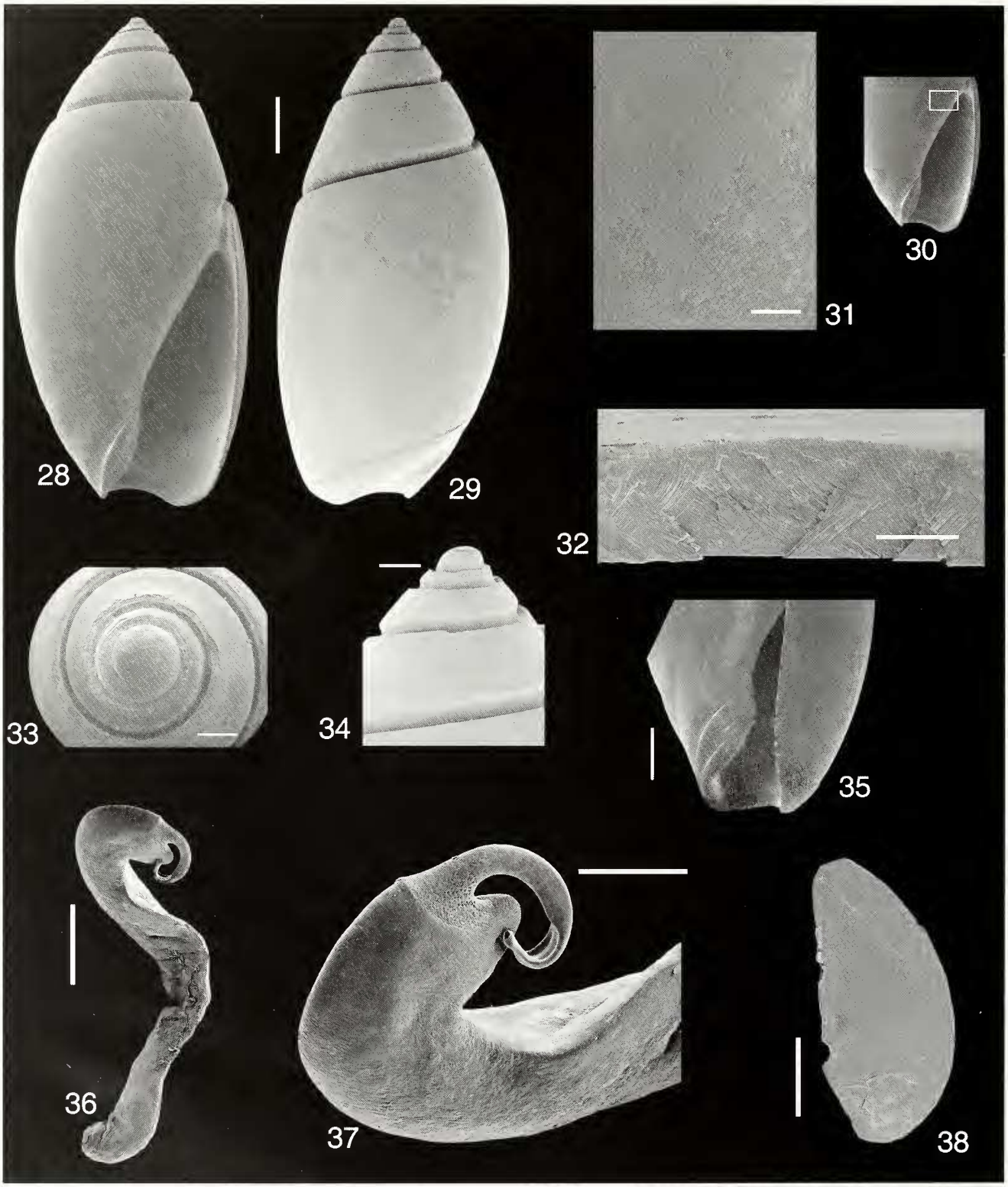
Olivella plata was described originally as a subspecies of *Olivancillaria auricularia* in a very short description together with other Quaternary species (Ihering, 1908). Ihering mentioned *Olivella tehuelchana* two lines above that, although it is difficult to believe that he could not differentiate between the genera *Olivancillaria* and *Olivella*. Castellanos and Fernández (1965: 103) reported seeing the type specimen. The only material they had available was lot MACN-In 6619, which contained several specimens and included a handwritten label from Doello-Jurado (former curator of the Invertebrate Division at the MACN), explaining that the material was split from a larger lot (also housed at the MACN) and identified as "*O. tehuelchana* d'Orbigny" (=*O. puelcha* Duclos) by Ihering. These facts apparently lead Castellanos and Fernández to the erroneous conclusion that this was the type material of *O. plata*. The locality data for this lot was Monte Hermoso, while the type locality for *O. plata* is Punta Piedras (Ihering, 1908: 432). Part of Ihering's type material is housed at the MACN and part at the MZUSP. After a careful revision of both collections it is evident that the type material of *O. plata* was not deposited in either of these institutions and was never illustrated. Nevertheless, the characteristic shape

of the anterior part of the females of *O. puelcha* allows the identification with some confidence and the posterior synonymization of *O. plata*.

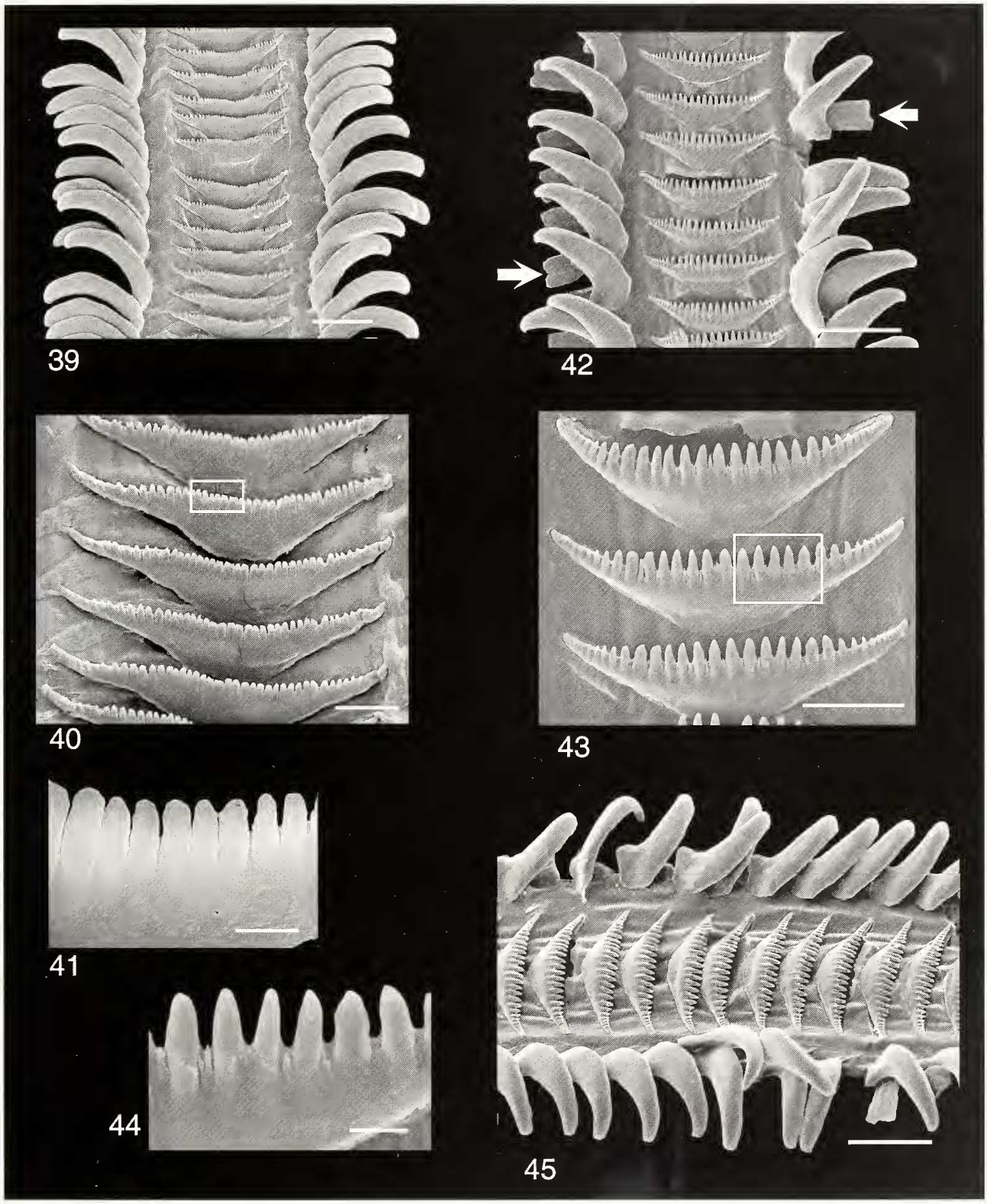
Pastorino (2007) described the sexual dimorphism of this species (as *O. plata*). A careful study of the entire type series of *Olivina tehuelchana* d'Orbigny [=*Olivella puelcha* Duclos] housed at the BMNH allows the recognition of both sexual morphs, establishing that the males were described by Duclos and d'Orbigny as *Oliva puelcha* and *Olivina tehuelchana*, respeetively and, several



Figures 20–27. *Olivella tehuelcha* (Duclos, 1835). **20–22.** Syntype of *Olivina puelchana* d'Orbigny, BMNH 1854.12.4.408, Bahía San Blas, Argentina. **23–25.** Another syntype of *Olivina puelchana* d'Orbigny, BMNH 1854.12.4.408, Bahía San Blas. **26.** MACN-In 37605, Punta Pardelas, Golfo Nuevo, Argentina. **27.** Detail of the columella plaits of MACN-In 16675. Scale bar = 3 mm.



Figures 28–38. *Olivella tehuelcha* (Duclos, 1835). **28–29.** Two views of MACN-In 37605, Punta Pardelas, Golfo Nuevo, Argentina, coated for SEM. **30–31.** Detail of the parietal callus. **32.** Ultrastructure, fracture surface commarginal. **33–34.** Protoconch, **33.** apical view. **34.** Lateral view. **35.** Detail of columellar plaits of MACN-In 37605. **36–37.** Penis, critical-point dried. **37.** Detail of the papilla. **38.** SEM, external view of the operculum. Scale bars: Figures 30, 31 = 100 µm; 32 = 180 µm; 33 = 200 µm; 34 = 300 µm; 35 = 800 µm; 36 = 1000 µm; 37 = 500 µm; 38 = 1000 µm.



Figures 39–45. *Olivella* radulae. **39–41.** *Olivella puelcha* (Duclos, 1835). **39.** General view. **40.** Detail of the rachidian teeth of the radula in Figure 39. **41.** Detail of the cusps of the rachidian in Figure 40. **42–45.** *Olivella tehuelcha* (Duclos, 1835). **42.** General view, arrows head quadrangular pieee underlying lateral teeth. **43.** Detail of the rachidian teeth of the radula in Figure 42. **44.** Detail of the cusps of the rachidian in Figure 43. **45.** Lateral view of the radula. Scale bars: Figure 39 = 50 µm; 40 = 20 µm; 41 = 5 µm; 42 = 100 µm; 43 = 20 µm; 44 = 10 µm; 45 = 100 µm.

decades later, the females as *Olivancillaria auricularia plata* by Ihering.

Borzone (1995) briefly described the egg capsules from material collected in southern Brazil (as *O. plata*). The embryos and egg capsules, illustrated here (Figures 13–16), were collected during the southern hemisphere summer (November–January).

Olivella tehuelcha (Duclos, 1835)
(Figures 20–38, 42–45)

Oliva tehuelcha Duclos, 1835: pl. 4 bis, fig. 7–14, 21.
Oliva puelchana d'Orbigny, 1839: pl. 59, fig. 13–19; Marrat, 1871: 35, figs. 461, 462.
Olivina puelchana d'Orbigny, 1840: 418.
Oliva puelchana Duclos in Chenu, 1844: 6.
Oliva puelcha Duclos in Chenu, 1845: pl. 5, figs. 7–14.
Olivella jaspidea Gmelin.—Dall, 1890: 310 (according to Klappenbach, 1991c).
Olivella puelchana d'Orbigny.—Formica-Corsi, 1900: 80, fig. 19; Carcelles, 1944: 159; Castellanos and Fernández, 1965: 103, figs. 1–3; Castellanos, 1970: 122, pl. 10, fig. 6; Aguirre, 1993: 30, pl. I, fig. 5.
Olivella tehuelcha (Duclos, 1835).—Klappenbach, 1964: fig. 5; 1991b: 121; Abbott and Dance, 1986: 194.
Olivella puelcha (Duclos, 1840).—Rios, 1985: 114, fig. 505; Calvo, 1987: 164, fig. 151; Rios, 1994: 144, fig. 630.

Description: Shell medium size for the genus, up to 15 mm in length, subovate, elliptic, solid, with five smooth, flat whorls. Protoconch with at least two whorls, totally smooth; transition to teleoconch not clearly defined (Figures 33, 34). Color variable, with light or dark brownish background, some specimens with brighter, closely arranged, flamules. Spire elevated, <0.5 total length; suture channeled, very deep; parietal callus with very weak, microscopic, regularly arranged pustules (Figure 31). Columella with only two plaits, with obsolete intermediate plait occasionally present and visible towards interior of aperture (Figures 27, 35, arrows). Fasciolar band thin, whitish, posterior groove distinct; anterior portion of fasciolar band dark. Shell ultrastructure composed of single layer of crossed-lamellar structure (Fig. 32). Radula rachiglossate (Figures 42–45), with 28–30 rows of teeth. Rachidian teeth eliptical with regularly curved base; 23–26 denticles of same size along mid-section, but abruptly diminishing to the sides. Smaller, almost obsolete denticles always present. Lateral teeth, typically curved, with sharp end and flat profile. A quadrangular, flat piece, is always present under lateral teeth (Figure 42, arrow head).

Operculum extremely thin, translucid, yellowish, elliptical, with subterminal nucleus. Growth lines cover entire operculum surface (Figure 38).

Penis large and flat, ending in long and curved papilla when protruded. Tip of the penial papilla flat and tapering (Figures 36, 37).

Type Material: Sixteen syntypes of *Olivina puelchana*, BMNH 1854.12.4.408. Color variation is evident in the type series, ranging from dirty white and yellowish, to dark brown. Two syntypes are illustrated here in Figures 20–22 and 23–25.

Type Locality: "Baie de San Blas", south of Buenos Aires Province, Argentina.

Other Material Examined: MACN-In 16675, Mar del Plata, males and females; MACN-In 9174, Golfo San José, several specimens; MACN-In 19670 all dead, occupied by sipunculids, Isla Trinidad, Bahía Blanca; MACN-In 8889 two shells with hermit crabs; MACN-In 30331, Mar del Plata, 32–36 m, two specimens, several shells; MACN-In 30318, Mar del Plata, all specimens; MACN-In 14348, 38°35′ S, 57°09′ W, in 100 m, 1 shell; MACN-In 24150, 36°24′ S, 55°53′ W, 1 specimen, 2 shells; MACN-In 20243, Bahía San Blas; MACN-In 14349, Mar del Plata, all with hermit crabs.

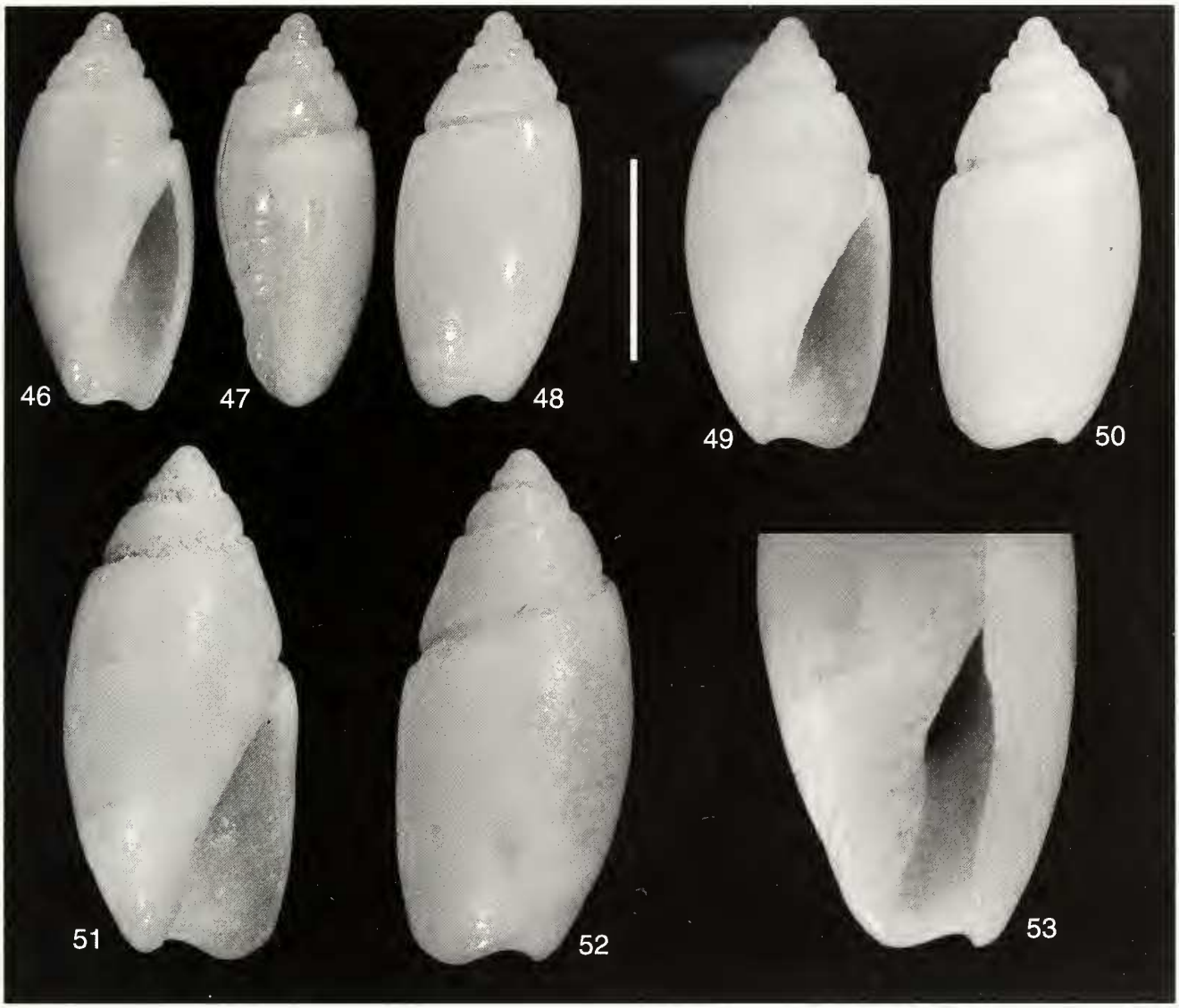
Distribution: Rio Grande do Sul, Brazil (Rios, 2009) to Punta Pardelas, Golfo Nuevo, Chubut, Argentina.

Remarks: *Olivella tehuelcha* and *O. puelcha* were confused since they were published initially by Duclos and later by d'Orbigny (see Remarks under *O. puelcha*). As it was stated by d'Orbigny (1840: 418, footnote), Duclos's illustration was transposed so the names were changed, but they have priority, which supports Duclos's original designation. Therefore, d'Orbigny's type material of *Olivina puelchana* refers to *Oliva tehuelcha* Duclos. Klappenbach (1991b) clarified the changes and different denominations of both species. As suggested previously by Klappenbach (1964), *O. defiorei* from Brazil is a comparable species. He pointed out differences in the color pattern and the absence of operculum in the Brazilian species. In the same paper he illustrated the rachidian tooth of the radula of *O. tehuelcha*. That illustration shows no intermediate, obsolete denticles between the more developed, normal ones. In addition, in *Olivella defiorei* the denticles end far from the tips of the rachidian. These characters are only visible at the SEM, therefore it is highly plausible that Klappenbach never saw them. Formica-Corsi (1900: 80, fig. 19) illustrated in his catalogue of mollusks from Uruguay a somewhat wide specimen, which is closer to *Olivancillaria contortuplicata*. Nevertheless the description fits that of *Olivella tehuelcha*.

Olivella santacruzence Castellanos and Fernández, 1965
(Figures 46–53)

Olivella santacruzence Castellanos and Fernández, 1965: 102, fig. 10, 11.

Description: Shell small (up to 9 mm), subquadrangular, of 4–4.5 smooth whorls; Protoconch of about two whorls, without visible transition to teleoconch. Color white, rarely with some very weak yellow spots. Spire low, suture channeled, very wide. Paricta callus smooth, weakly developed. Columella with six oblique plaits (nine in the holotype, according to the authors). Fasciolar



Figures 46–53. *Olivella santacruzence* Castellanos and Fernández, 1965. **46–52.** MLP 3863 paratypes, Punta Medanosa, Santa Cruz province, Argentina. **53.** Detail of the columellar plaits of the shell in Figure 51. Scale bar, all shells = 3 mm.

band wide, distinctly colored, posterior groove well defined. Soft parts unknown.

Type Material: Six paratypes, MLP 3863 (incorrectly published by the authors as 27284). However, only five are referable to this species, as the sixth is a juvenile male of *O. puelcha*. None of these specimens match the published size of the holotype, which is apparently lost. All the specimens are beach-collected.

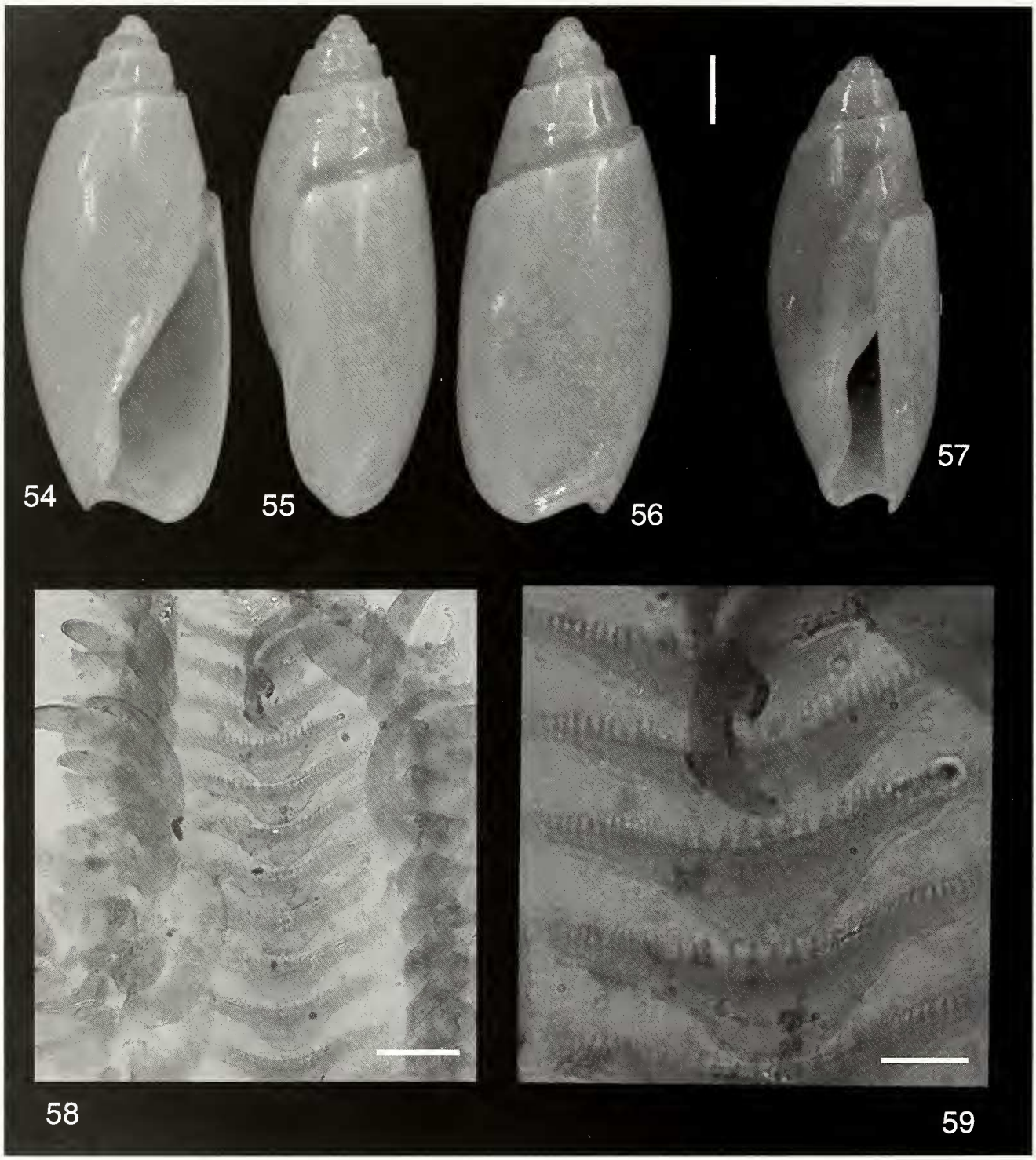
Type Locality: Punta Medanosa, Santa Cruz Province, Argentina (approximately 48°04′ S, 65°56′ W). This locality was recently visited, but specimens could not be found.

Distribution: Known only from the type locality.

Olivella orejasmirandai Klappenbach, 1986
(Figures 54–59)

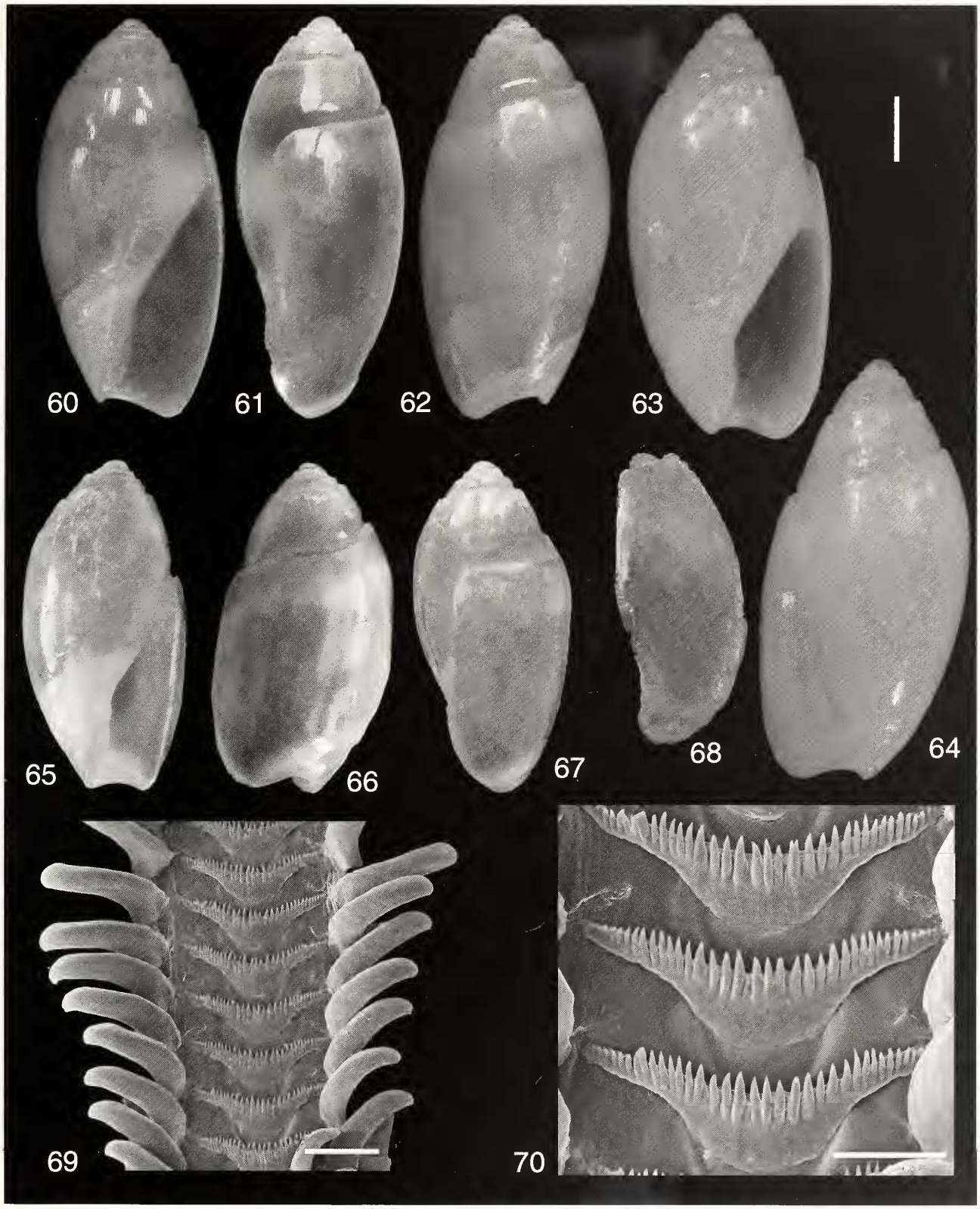
Olivella (Olivina) orejasmirandai Klappenbach, 1986. 2, figs. 1–5; Rios, 1994: 145, pl. 47, fig. 627.

Description: Shell small size for the genus, reaching 8 mm in length, elongated, solid, with five smooth, very flat whorls. Protoconch with 1.5 whorls, totally smooth; transition to teleoconch visible. Color whitish, some specimens translucent, with a subsutural weak white line. Spire elevated, conical, <0.5 total length; suture channeled, very deep and wide, with the margin reflected over canal; Columellar lip strong, well defined, with a sinuous abaxial margin. Parietal callus thick, growing adapically over suture, covering up to half of previous whorl. Parietal lip oblique,



Figures 54–59. *Olivella orejasmirandai* Klappenbaeh, 1986. **54–56.** Holotype, MNHNM 14765, 33°17′ S, 50°34′ W, Off Albardão, Rio Grande do Sul State, Brazil. **57.** Paratype, MNHNM 14766, tilted 30° to show curved eolumella. **58.** Holotype, radula. **59.** Detail of rachidian teeth of same radula. Seale bars: Figure 57 = 1 mm; 58 = 50 µm; 59 = 20 µm.

straight, with sudden change of direction beyond eolumella. Outer lip sharp. Aperture triangular. Columella with only one plait. Fasciolar band white, posterior groove distinet, deep. Radula rachiglossate, with 22 rows of teeth. Rachidian teeth with strongly curved base; 38–40 dentieles of same size along middle of rachidian, but getting thinner toward sides. Lateral teeth typically curved, sharp at end. A quadrangular piece is present under lateral teeth.



Figures 60–70. *Olivella* cf. *riosi* Klappenbach, 1991. **60–62.** MACN-In, 37602, 42°56′ S, 64°25′ W, 15 m depth, about 700 m off Estancia el Pedral Golfo Nuevo, Chubut, Argentina. **63–64.** Holotype of *O. riosi* Klappenbach, 1991, MNHNM 14773, 35°36′05″ S, 53°32′00″ W. **65–67.** Another specimen, same locality as for Figures 60–62. **68.** Operculum of the specimen in Figures 60–62. **69.** Radula, general view. **70.** Radula, rachidian teeth. Scale bars: All shells = 1 mm; Figure 69 = 50 µm; 70 = 30 µm.

Operculum translucent, yellowish, elliptical. Unfortunately, no soft parts are known other than radula and operculum.

Type Material: Holotype MNHNM 14765; paratypes, MNHNM 14766, 11017 and 14769.

Type Locality: Off Albardão, Rio Grande do Sul state, Brazil (33°17′ S, 50°34′ W) in 173 m. Paratypes: Off Rio de la Plata, Samborombón Bay.

Distribution: Southern Brazil, off Cabo Santa María, Uruguay, and off Río de la Plata, Argentina.

Remarks: This taxon is presently known only from the type material. The radulae were re-studied and illustrated from the original slides. It is somewhat different from what is depicted in the author's illustrations. Figures 58 and 59 show the denticles of the rachidian of almost the same size in the middle of the teeth and larger than those from the tips.

Olivella cf. *riosi* Klappenbach, 1991
(Figures 60–70)

Olivella (Olivina) riosi Klappenbach, 1991a: 2, figs. 1–3, [7–10 in error in the original publication] 4, 5; 9–10.

Description: Shell very small for the genus, up to 6.5 mm, suboval, of 4–4.5 flat, smooth whorls; Protoconch short, number of whorls hard to determine, as there is no visible transition to the teleoconch. Color pale reddish or brownish with indistinct withish subsutural band. Spire very low, suture canaliculated, wide. Parietal callus pronounced, smooth, well defined. Columella with one flat, wide plait. Fasciolar band wide, whitish; posterior groove obsolete.

Radula rachiglossate, with 18 rows of teeth. Rachidian teeth narrow, with small curved base; 34–36 sharp denticles of irregular size along middle of each tooth, diminishing toward sides. Lateral teeth, long, typically curved, with blunt ends and flat profile. Under laterals a quadrangular piece is present. Operculum extremely thin, translucid, subterminal nucleus. Growth lines covering entire surface.

Distribution: Known only from about 700 m off Estancia el Pedral, Golfo Nuevo, Chubut, Argentina (42°56′ S, 64°25′ W) in 15 m depth.

Remarks: These two specimens were compared to the type material of *O. riosi*. At present there is no clear way to separate the two species. However, as more material becomes available (male specimens), this may prove to be a new species.

DISCUSSION

Four species of *Olivella* are presently known to occur in Argentine waters. Of these, three are also recorded from Uruguay and Brazil. It is clear that the genus is basically a temperate group so the diversity decreases in colder waters.

In his classical paper on the *Olivella* of North and Central America, Olsson (1956) reviewed a large number of species and established subgenera based primarily on shell and radular characters. He included the two common species from Argentina, *O. puelcha* (as *O. teluelchana*) and *O. teluelcha* (as *O. puelchana*), as well as the northern *O. bullula*, in the subgenus *Olivina* d'Orbigny, for which *O. puelcha* Duclos (=*O. teluelchana* d'Orbigny in the original) serves as type species. The main characters established by Olsson for the subgenus *Olivina* are: narrow sutures, and a low columella, with one or two folds. These characteres are actually very variable, and some included species (e.g., *O. santacruzcnce*, with several columellar folds) do not conform to these criteria. The presence of the operculum was considered by Olsson to be a subgeneric character. However, neither the morphology of the radulae nor of the penes were used to distinguish the subgenera.

My review of several of the South American species of *Olivella* shows that the morphology of the penis appears to be a distinguishing feature for taxonomic decisions. Most of the species described here as well as some of the Brazilian species (e.g., *Olivella riosi*, *O. minuta*, *O. tehuelcha*, *O. puelcha*, *O. semistriata*, and *O. formicacorsii*) studied have an extremely characteristic penis that allows for clear identification. In contrast, the morphology of the shell, which was used as a major tool to differentiate species or genera, is sometimes an unreliable source of characters. In addition, an interesting sexual dimorphism in shell morphology was recently discovered in *O. puelcha*, which raises doubts about the unequivocal use of shell characters to distinguish species or genera (see Pastorino, 2007). Unfortunately, samples that can be reliably sorted to by sex are not always available for study.

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LITERATURE CITED

Absalão, R. 2000. A new species of *Olivella* (Neogastropoda, Olivellidae) from Brazil. Argonauta 14: 11–13.

Absalão, R. and A.kD. Pimenta. 2003. A new subgenus and three new species of Brazilian deep water *Olivella* Swainson, 1831 (Mollusca, Gastropoda, Olivellidae) collected by the RV *Marion Dufresne* in 1987. Zoosystema 25: 177–185.

Aguirre, M.L. 1993. Type specimens of Quaternary marine gastropods from Argentina. Ameghiniana 30: 23–38.

Borzone, C.A. 1995. Ovicápsulas de prosobranquios (Mollusca: Gastropoda) de una playa arenosa expuesta del sur del Brasil. Iheringia 79 (Ser. Zoología): 47–58.

Calvo, I.S. 1987. Rádulas de Gastrópodes Marinhos Brasileiros. Editora da Fundação Universidade do Rio Grande, Rio Grande, 201 pp.

Carcelles, A. 1944. Catálogo de los moluscos marinos de Puerto Quequén. Revista del Museo de La Plata 3, sección Zoología: 233–309.

Castellanos, Z.J.A. de. 1970. Catálogo de los moluscos marinos bonaerenses. Anales de la Comisión de Investigaciones Científicas de la provincia de Buenos Aires 8: 9–365.

Castellanos, Z.J.A. de and D. Fernández. 1965. Consideraciones sobre las especies del género *Olivella* y una nueva especie para la Argentina. Neotropica 11(36): 101–104.

d'Orbigny, A.D. 1834–1847. Mollusques. In: C.P. Bertrand (ed.) Voyage dans l'Amerique Meridionale (Le Bresil, La Republique Orientale de L'Uruguay, La Republique Argentine, La Patagonie, La Republique du Chili, La Republique de Bolivia, La Republique du Perou), execute pendant les annees 1826, 1827, 1828, 1829, 1830, 1831, 1832 et 1833,.Volume 5 (3). Chez Ve. Levrault, Paris, p. 758.

Duclos, P.L. 1835. Histoire naturelle generale et particuliere de tous les genres de coquilles univalves marines á l'état vivant et fossile, publiée par monographies; ou description et clasification methodique de toutes les especes connues jusqua a ce jour, representees en couleur avec la figure et l'anatomie d'un afses grand nombre de mollusques nouvellement decouverts. Firmin Didot Freres, Paris, Genre Olive.

Duclos, P.L. 1844–1845. *Oliva* Lamarek. In: Chenu, J.-C. (ed.) 1842–1853, Illustrations conchyliologiques ou description et figures de toutes les coquilles connues, vivantes et fossiles. Paris, pp. 1–31.

International Commission on Zoological Nomenclature (ICZN). 1999. International Code of Zoological Nomenclature. 4th edition. The International Trust for Zoological Nomenclature, London, 306 pp.

Ihering, H. von. 1908. Mollusques du Pampéen de Mar del Plata et Chapalmalán recueillis par M. le Dr. Florentino Ameghino en 1908. Anales del Museo Nacional de Buenos Aires, Serie 3, 10: 429–438.

Klappenbach, M.A. 1962. Nuevo subgénero y nueva especie de *Olivella* de la costa atlántica del Uruguay. Archiv für Molluskenkunde 91: 95–98.

Klappenbach, M.A. 1964. Nueva *Olivella* (Moll. Gastr.) de la costa brasileña del estado de San Pablo. Comunicaciones Zoológicas del Museo de Historia Natural de Montevideo 8 (101):1–5.

Klappenbach, M.A. 1986. Nueva especie de *Olivella* (Mollusca, Gastropoda, Olividae) de aguas Atlanticas del sur de Brasil, Uruguay y Argentina. Comunicaciones Zoológicas del Museo de Historia Natural de Montevideo 160: 1–7.

Klappenbach, M.A. 1991a. *Olivella riosi* (Mollusca, Gastropoda, Olividae), nueva especie obtenida en aguas de la plataforma continental uruguaya y del extremo sur del Brasil. Comunicaciones Zoológicas del Museo de Historia Natural de Montevideo 12 (175): 1–8.

Klappenbach, M.A. 1991b. Notas sobre *Olivella* Swainson, 1831. 1. Comentarios sobre nomenclatura en dos especies de *Olivella* (Moll. Gastr.) del Atlántico sur. Comunicaciones de la Sociedad Malacológica del Uruguay 7(56–57): 117–122.

Klappenbach, M.A. 1991c. Notas sobre *Olivella* Swainson, 1831. 2. El pasaje del "Albatross" por aguas uruguayas y argentinas y la cita de *Olivella jaspidea* y *Olivella bullula* para dicha zona. Comunicaciones de la Sociedad Malacológica del Uruguay 7 (58–59): 175–181.

Marrat, F.P. 1871. *Oliva*, Bruguière. In: Sowerby I, G.B. Thesaurus Conchyliorum or Monographs of genera of shells. Vol. 4. London, pp. 1–46, pls. 1–25.

Olsson, A.A. 1956. Studies on the genus *Olivella*. Proceedings of the Academy of Natural Sciences of Philadelphia 108: 155–226.

Pastorino, G. 1995. Moluscos costeros recientes de Puerto Pirámide, Chubut, Argentina. Academia Nacional de Ciencias, Córdoba, Miscelánea (93): 1–30.

Pastorino, G. 2007. Sexual dimorphism in shells of the southwestern Atlantic gastropod *Olivella plata* (Ihering, 1908) (Gastropoda: Olividae). Journal of Molluscan Studies 73: 183–285.

Rios, E.C. 1985. Seashells of Brazil. Editora da Fundação Universidade do Rio Grande, Rio Grande, 328 pp.

Rios, E.C. 1994. Seashells of Brazil. 2nd ed. Rio Grande, Editora da Fundação Universidade do Rio Grande, 368 pp.

Rios, E.C. 2009. Compendium of Brazilian Seashells. Evangraf, Rio Grande, 676 pp.